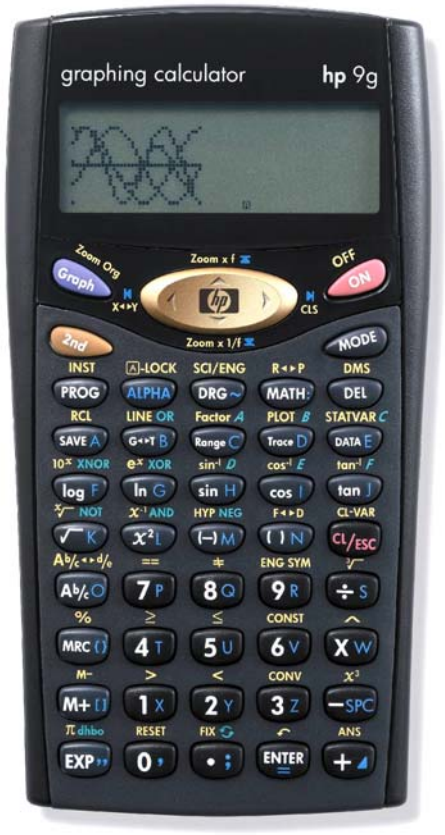
hp calculators



HP 9g Operating Modes and Display Format

The MODE Key

The MAIN Mode

The STAT Mode

The BaseN Mode

The PROG Mode

The Angle Mode

Display Format

HP 9g Operating Modes and Display Format

This learning module introduces the different operating modes in which your HP 9g can work. It also describes the angle mode used by the trigonometric functions. Finally, you will find a description of the various display formats available.

The MODE key (MODE)

This key displays a menu with the four operating modes available on your HP 9g. The active mode appears underlined in the mode menu. You can use the ‹ and › keys to select the desired mode and then press ENTER or alternatively you can simply press the number of the mode. They are MAIN (0), STAT (1), BasenN (2) and PROG (3) Pressing CL/ESC cancels this menu returning to the mode that was active when MODE was pressed.

While the mode menu is displayed, you can use the ^ and ˇ keys to adjust the display contrast.

The MAIN mode

It is the default mode and the one you will use most of the time. Use this mode for most calculations (arithmetic and function calculations) and for plotting graphs. Programs can also be executed in this mode using the PROG key.

The STAT mode

Used for statistical calculations. When this mode is selected another menu is displayed with the following options: 1-VAR for single-variable statistics, 2-VAR for two-variable statistics, REG for regression calculations and D-CL which clears all the statistical data entered. Graphs can also be plotted in this mode. There are four types of graphs which are specific to this mode, namely normal distribution, histogram, statistical process control and scatter graph. When this mode is active, the annunciator STAT is lit. Several learning modules for the HP 9g deal with statistical calculations.

The BaseN mode

This mode is used for calculations in several bases: base 2, base 8, base 10 an base 16. Allowable operations are basic arithmetic and logical operations. An annunciator shows the current base you are working in. BaseN calculations are described in the HP 9g learning modules *Base Conversions* and *Logical Operations..*

The PROG mode

In this mode programs can be entered, edited, deleted, executed and traced (for debugging). A submenu displays all these options. Programs are described in the learning module *Writing a Small Program.*

The Angle mode

The angle mode is shown in the display of your HP 9g with an annunciator at the bottom. Letters D, R and G stand for the three angle units Degrees, Radians and Grads respectively. Setting the angle mode is as simple as pressing the DRG~ key, selecting the desired mode and pressing ENTER (or you can press CL/ESC to disregard the change and quit the DRG menu). Angle values are:

Degrees	360 degrees in a circle
Radians	2π radians in a circle
Grads	400 grads in a circle

The angle measure affect trigonometric calculations and polar/rectangular coordinate conversions.

Display format

The default format is Floating Point notation in which the number of displayed decimal places is not fixed but depends on the result. All digits are displayed except *trailing* zeros. Up to 9 decimal places can be displayed. You can set the number of decimal places displayed, though, to any number from 0 to 9 by pressing 2nd FIX and then the desired number – the ENTER key is not required now . This is called a fixed display format because the number of displayed decimal digits is always the same, trailing zeros are appended if needed. To restore the default mode press 2nd FIX . (dot). 2nd FIX displays results rounded to a fixed number of decimal places, but the actual numbers (that is, the ones internally stored) are not altered.

Example 1: Calculate $8\pi^2$ in the default mode.

Solution: To make sure you are currently in the default mode, press 2nd FIX . 2nd SCI/ENG select FLO and press ENTER Now the calculator is in Floating Point mode with all digits displayed. Press

8 2nd π 𝑥² ENTER

Answer: 78.95683521

Example 2: Calculate $8\pi^2$ showing only two decimal digits.

Solution: With the previous result still displayed , just press

2nd FIX 2

The result has been rounded to two decimal digits.

Answer: 78.96

When you set FIX · (2nd FIX .) again, all the digits re-appear because the internal value remains untouched, and is used in chain calculations to full precision. To round an operation to the current display setting use the RND function in the MATH menu (MATH: and press 3 or select RND and press ENTER); when this result is used in another calculation, it is the rounded number that will be used instead.

Example 3: Round π to two decimal digits and display this number to 6 decimal digits.

Solution: Assuming FIX 2 is still the current format, press

2nd π ENTER

3.14 is displayed but the internal number is still 3.141592654 (and so on up to 24 digits). Press

MATH: 3 2nd ANS ENTER

Now the internal result has been rounded. With the previous result still displayed , just press 2nd FIX 2 . The result has been rounded to two decimal digits. Finally 2nd FIX 6 displays four trailing zeros.

Answer: 3.140000

Three number display formats are available on the HP 9g, namely the Floating Point, the Scientific format and the Engineering format. They are accessed through the SCI/ENG menu (2nd SCI/ENG).

As stated above, the Floating Point format is set by default and corresponds to the full-precision display. Additionally, the number of displayed decimal places can be set beforehand by pressing 2nd FIX .

In Scientific format, results are displayed with an exponent, one digit to the left of the decimal point, and the number of decimal places specified by the current FIX setting.

Example 4: Display 123.456789 in Scientific format with five decimal digits.

Solution: Let's key in the number 123.456789 and then set the display format to Scientific: press

1 2 3 . 4 5 6 7 8 9 2nd SCI/ENG

select SCI and press ENTER . Now let's fix the number of decimal digits to 5 by pressing:

2nd FIX 5

Answer: 1.23457×10^{02}

In Engineering format, results are displayed with an exponent that is a multiple of 3, and the number of significant digits beyond the first one specified by the current FIX setting. For example, the previous result becomes 123.45679×10^{0} in Engineering 5 format.

Example 5: Display 123.456×10^{7} in Engineering format with five decimal digits.

Solution: Let's key in the number

1 2 3 . 4 5 6 EEX 7

and now set the display format to Engineering: press

2nd SCI/ENG

select ENG and press ENTER . The number of decimal digits is already 5 from the previous example.

Answer: 1.23456×10^{09}

Notice that the SCI and ENG annunciators are lit when these formats are active. Also, the FIX annunciator is turned on whenever a fixed number of decimal places has been specified (i.e. F0 through F9, but not F·)

It is worth noting that there are two particular combinations of FIX and SCI/ENG settings that are not present on many other calculators, and that you may find particularly convenient. They are the non-fixed SCI and ENG formats: 2nd FIX . 2nd SCI/ENG select SCI or ENG and press ENTER .